

More About Pollution Prevention and Toxics Use Reduction

Pollution Prevention:

Conceptually, toxics use reduction is a subset of the larger environmental protection strategy commonly known as pollution prevention (P2). This strategy addresses pollution concerns by minimizing or eliminating pollution at the source, rather than relying on end-of-pipe controls, treatment or clean up. Pollution prevention avoids pollution problems by not allowing them to be created in the first place.

Toxics Use Reduction:

Toxics use reduction encompasses the range of environmental protection strategies aimed at minimizing the input of toxic materials in a given process and the generation of harmful or hazardous byproducts.

Examples of Toxics Use Reduction Techniques:

<i>Input substitution or product reformulation:</i> the replacement of toxic materials with non-toxic alternatives.	A paper manufacturer reduces copper levels in its effluent by replacing a brass-based coating with a mica-based substitute.
<i>Production unit redesign or modification:</i> altering processes to eliminate or reduce the need for toxic inputs and/or the generation of hazardous byproducts.	A metal finisher replaces a solvent-based parts cleaning system with an agitating parts washer using a water-based cleaning solution.
<i>Production unit modernization:</i> replacing or upgrading older, less efficient machinery and processes.	A paper manufacturer replaces its sulfuric acid system used for re-pulping off specification papers with an innovative liquid carbon dioxide system.
<i>Improved operation and maintenance of equipment:</i> employing good housekeeping practices and regular maintenance to avoid unnecessary pollution risks.	A printer trains employees to apply cleaning solvents with squeeze bottles to reduce solvent use and rag absorption, to recover and re-use solvent from cleaning rags where possible, and to store used cleaning rags in closed containers.
<i>Recycling, reuse, or extended use of toxics:</i> using filtration and other closed loop methods to get more mileage out of toxic materials before they must be disposed or discharged.	A metal cutting operation installs a system that filters, cleans, and recycles the coolant used on its machines.

Benefits of Pollution Prevention and Toxics Use Reduction:

The benefits that pollution prevention and toxics use reduction techniques offer are considerable because they address environmental problems before they are created.

<i>Reduced liability:</i> less toxics use generally means fewer pollution risks, reduced handling of toxics, and reduced worker exposure to toxics.	A clothing manufacturer replaces a solvent-based adhesive with a solvent-free hot melt adhesive that is non-flammable and emits NO volatile organic compounds (VOCs) or hazardous air pollutants (HAPs).
<i>Cost savings:</i> by reducing the use of toxics, facilities often benefit from reduced operating costs, reduced materials purchasing costs, reduced hazardous waste storage and disposal costs, and increased process efficiencies.	A metal stamping operation switches to a non-volatile lubricant and applies it with a low-volume misting unit, saving thousands of dollars annually on hazardous waste disposal and permitting costs.
<i>Reduced regulatory obligations:</i> although it depends on what role toxic materials play in the process, less toxics use generally means fewer or less stringent permitting, filing, or other regulatory requirements.	A metal and jewelry finishing operation eliminates the use of ammonia in its annealing ovens, freeing the company from Toxics Use Reduction Act (TURA) reporting requirements and associated fees.

Improved public health and environment:

both at the local and regional level, toxics use reduction helps remove a large category of public health and environmental risks in ways that pollution controls or clean up are unable to accomplish – for example an end of pipe control does nothing to protect workers, avoid fugitive emissions, etc. during the manufacturing process.

A hospital implements a mercury reduction campaign to limit the risk of worker and patient exposure to mercury (e.g. from broken thermometers) and the volume of mercury in the hospital's waste stream (e.g. from thermometers, blood pressure monitors, fluorescent lamps). Mercury in the waste stream may ultimately contaminate humans and wildlife through the transfer of organic methyl